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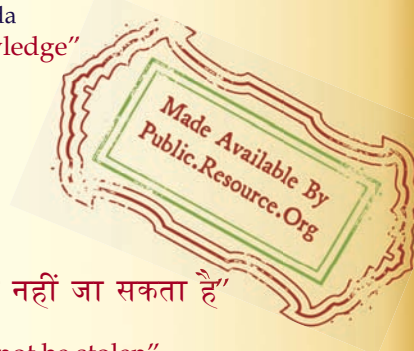
IS 14267-4 (1995): Quick Frozen Vegetables, Part 4: Quick Frozen Beans [FAD 10: Processed Fruits and Vegetable Products]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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शीघ्र हिमीकृत सब्जियाँ – विशिष्ट

भाग 4 शीघ्र हिमीकृत फली

Indian Standard

**QUICK FROZEN VEGETABLES —
SPECIFICATION**

PART 4 QUICK FROZEN BEANS

UDC 664.84.037.5 [633.352]

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**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002**

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Processed Fruits and Vegetable Products Sectional Committee had been approved by the Food and Agriculture Division Council.

Quick frozen vegetables are the products subjected to a freezing process, in an appropriate equipment, carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process is not regarded as complete unless the product temperature has reached -18°C at the thermal centre after thermal stabilization.

Quick frozen vegetables are gaining popularity in India, due to convenience in their storage, handling and use, as well as their ready availability all round the year, irrespective of season.

To provide guidelines for ensuring the quality of these products, this Indian Standard has been formulated in different parts, each part dealing with a specific vegetable. Part 4 deals with quick frozen beans and is based on CODEX STAN 113-1981 'Quick frozen green beans and quick frozen wax beans'.

In preparation of this standard, due consideration has been given to the provisions of the *Prevention of Food Adulteration Act, 1954* and Rules framed thereunder and also to the *Fruit Products Order, 1955* and the *Standards of Weights and Measures (Packaged Commodities) Rules 1977*. The standard is subject to the restriction imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***QUICK FROZEN VEGETABLES —
SPECIFICATION****PART 4 QUICK FROZEN BEANS****1 SCOPE**

This standard prescribes the requirements and methods of sampling and test for quick frozen beans of the species *Phaseolus vulgaris* L. and *Phaseolus coccineus* L.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard the following definitions shall apply.

3.1 Whole Beans

Whole pods of any length.

3.2 Cut Beans

Transversely cut pods in which 70 percent or more by count of the units are at least 20 mm long but not longer than 65 mm.

3.3 Short Cut Beans

Transversely cut pods in which 70 percent or more by count of the units are more than 10 mm but less than 20 mm long.

3.4 Diagonal Cut Beans

Pods cut approximately 45° to the longitudinal axis in which 70 percent by count of this units are more than 6 mm long.

3.5 Sliced Beans

Pods sliced lengthwise or at an angle up to approximately 45° to the longitudinal axis, with a maximum thickness of 7 mm.

3.6 Extraneous Vegetable Material (EVM)

Vegetable material from the bean plant, other than pod, such as leaf or vine, but excluding stem ends; other harmless vegetable material, not purposely included as an ingredient. For the purpose of assessment, EVM comprising bean leaf material will be differentiated from the other.

3.7 Stem End

A piece of the immediate stem which attaches the pod to the vine stem, whether present still attached to the pod or present loose in the product.

3.8 Blemish**3.8.1 Minor**

Each piece blemished due to insect or pathological damage affecting an area greater than a 3 mm diameter circle, or blemished by other means to a degree which noticeably detracts from its appearance.

3.8.2 Major

Each piece blemished due to insect or pathological damage affecting an area greater than a 6 mm diameter circle, or blemished by other means to a degree which seriously detracts from its appearance.

3.9 Mechanical Damage

A unit, in whole and cut styles, that is broken or split into two parts, crushed, or has very ragged edges to an extent that the appearance is seriously affected.

3.10 Tough Strings

Tough fibre which will support a mass of 250 g for 5 seconds or more when tested in accordance with the procedure given in Annex B.

3.11 Fibrous Unit

Each piece having parchment like material formed during the ripening of the pod, to the extent that the eating quality is seriously affected.

4 REQUIREMENTS**4.1 Description****4.1.1 Quick Frozen Beans**

The product prepared from fresh, clean, sound, succulent pods of the plants conforming to the characteristics of the suitable varieties of the species *Phaseolus vulgaris* L. or *Phaseolus*

coccineus L. Strings (if any), stems, stem ends are removed, and the pods washed and sufficiently blanched to ensure adequate stability of colour and flavour during normal marketing cycles.

4.2 Style

4.2.1 Quick frozen beans shall be presented in the following styles defined in 3.1 to 3.5:

- a) Whole
- b) Cut
- c) Short cut
- d) Diagonal cut
- e) Sliced

4.3 Optional Ingredients

4.3.1 Sugars

Sucrose, invert sugar, dextrose, fructose, glucose syrup, dried glucose syrup.

4.3.2 Salt

4.3.3 Condiments, such as Spices and Herbs.

4.3.4 Food Additives

As permitted under PFA Rules

4.4 General Requirements

4.4.1 The product shall be of reasonably uniform colour, grit.

4.4.2 The product shall be free from foreign flavour or odour, other than those imparted by any added optional ingredients.

4.3.3 The product shall be clean, free from sand, grit and other foreign material.

4.5 Absence of Visual Defects

The product shall be free from visual defects defined in 3.7 to 3.11 subject to a tolerance as given in Annex C.

4.6 The product shall be conforming to the requirements given in Table 1.

5 HYGIENIC PRACTICE

5.1 The product shall be processed and handled in accordance with the hygienic practices given in IS 14134 : 1994.

6 PACKING

The products shall be packed either in wax-coated paper board cartons or in food grade plastic packs or containers.

7 MARKING

The following information shall be clearly and indelibly marked on the package:

- a) Name of the product;
- b) Style of the product;
- c) Name and address of manufacturer;
- d) Batch or code number;
- e) Month and year of manufacture;
- f) Net mass;
- g) List of ingredients, arranged in descending order of proportion;

Table 1 Requirements for Quick Frozen Beans

(Clause 4.6)

Sl No.	Characteristic	Requirements	Method of Test, Ref to	
			CI No. of IS 2860 : 1964	Other Indian Standard
(1)	(2)	(3)	(4)	(5)
i)	Metallic Contaminants:			—
	a) Arsenic, mg/kg, <i>Max</i>	1	13	
	b) Lead, mg/kg, <i>Max</i>	2.5	14	
	c) Copper, mg/kg, <i>Max</i>	5.0	15	
	d) Zinc, mg/kg, <i>Max</i>	5.0	16	
	e) Tin, mg/kg, <i>Max</i>	250	17	
	f) Iron mg/kg, <i>Max</i>	15		Annex B of IS 7732 : 1975
ii)	Microbiological Requirements:			
	a) Bacterial plate count, colonies per gram, <i>Max</i>	50 000	—	IS 5402 : 1969
	b) Coliform plate count, per gram, <i>Max</i>	5	—	IS 5401 : 1969
	c) <i>Escherichia coli</i> , per gram	Absent	—	IS 5887 (Part 1) : 1976
	d) <i>Staphylococcus aureus</i> , per gram	Absent	—	IS 5887 (Part 2) : 1976
	e) <i>Clostridium perfringens</i> , per gram	Absent	—	IS 5887 (Part 4) : 1976

- h) Directions for keeping and thawing of the product;
- j) The words 'Best before,', (month and year to be indicated); and
- k) Any other details required under the *Standards of Weights and Measures (Packaged Commodities) Rules, 1977, Prevention of Food Adulteration Rules, 1955 and Fruits Products Order, 1955.*

7.1.1 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 SAMPLING

8.1 Representative samples of the material shall be drawn and tested for conformity to this standard by the methods prescribed in IS 2860; 1964.

7.1 BIS Certification Marking

The product may also be marked with the Standard Mark.

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
2860 : 1964	Methods of sampling and test for processed fruits and vegetables	(Part 2) : 1976	Part 2 Isolation, identification and enumeration of <i>Staphylococcus aureus</i> and <i>faecal streptococci</i> (first revision)
5401 : 1969	Methods for detection and estimation of coliform bacteria in foodstuffs	(Part 4) : 1976	Part 4 Isolation and identification of <i>Clostridium welchii</i> , <i>Clostridium botulinum</i> and <i>Bacillus cereus</i> and enumeration of <i>Clostridium welchii</i> and <i>Bacillus cereus</i> (first revision)
5402 : 1969	Method for standard plate count of bacteria in foodstuffs	7732 : 1975	Apple juice
5887	Methods for detection of bacteria responsible for food poisoning;	14134 : 1994	Code for hygienic practices for units for processing and handling of quick frozen foods
(Part 1) : 1976	Part 1 Isolation, identification and enumeration of <i>Escherichia coli</i> (first revision)		

ANNEX B

(Clause 3.10)

TOUGH STRING TEST

B-1 PRINCIPLE

Strings are removed from individual pods, fastened through a clamp assembly weighing 250 g, and hung so that the string supports the entire mass. If the string supports the mass for five seconds or more it is considered a tough string.

B-2 APPARATUS

B-2.1 Weighted Clamp

Use battery clamp (with teeth filed off or turned back), spring operated clothes pin, or binder clip which presents a flat clamping surface. Attach weight so that entire assembly of weight and clamp weighs 250 g (see Fig. 1). A bag containing lead pellets is convenient as a weight.

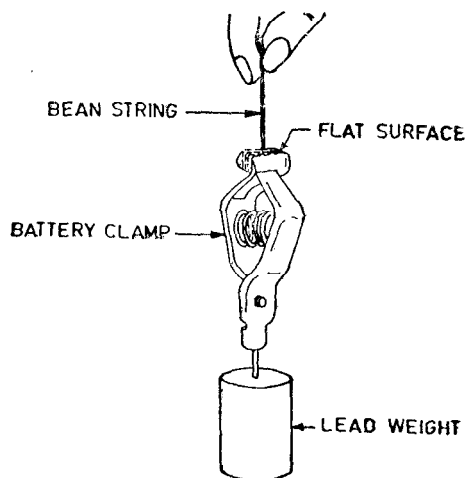


FIG. 1 TOUGH STRING TESTER FOR QUICK FROZEN BEANS

B-3 PROCEDURE

B-3.1 From the drained product select a representative sample of not less than 285 g. Record the mass of this test sample.

B-3.2 Break the individual bean units and set aside those that show evidence of tough strings. Remove the strings from the pods and retain the pod material for weighing.

B-3.3 Fasten the clamp assembly to one end of the string. Grasp the other end of the string with the fingers (a cloth may be used to aid in holding the string) and lift gently.

B-3.4 If the string supports the 250 g assembly for at least five seconds consider the bean unit as containing tough string. If the string breaks in less than five seconds, retest the broken parts that are 13 mm or longer to determine if such portions are tough.

B-3.5 Weigh the bean units which contain tough strings.

B-4 CALCULATION AND EXPRESSION OF RESULTS

B-4.1

$$g = \frac{g_1 \times 100}{g_2}$$

where

g = Pods containing tough strings, percent by mass

g_1 = Mass of pods containing tough strings

g_2 = Mass of test sample

ANNEX C**('Clause 4.5')****TOLERANCES FOR VISUAL DEFECTS****C-1 STANDARD SAMPLE SIZE**

The standard sample size for segregating and evaluating visual defects shall be as follows:

For EVM and stem ends — 1 kg.

For other defect categories — 300 g.

C-2 TOLERANCE FOR VISUAL DEFECTS

C-2.1 Any standard sample unit taken in accordance with the sampling plans given in 3 of IS 2860 : 1964, shall be assigned points in accordance with Table 2. The maximum number of defects permitted is the total allowable points rating indicated for the respective categories, minor, major and serious or the combined total of these categories.

C-2.2 Any standard sample unit shall be regarded as defective if it exceeds the total allowable points rating in any one or more of the defect categories, as given in Table 2, as appropriate for the style.

C-3 LOT ACCEPTANCE FOR QUALITY FACTORS

A lot is considered as acceptable when the number of 'defectives' as defined in C-2 does not exceed the acceptance number (c) for the appropriate sample size as specified in col 4 of Table 1 of IS 2860 : 1964

Table 2 Total Allowable Points Rating for Visual Defects

Sl No.	Defect	Defect Categories			Total
		Minor	Major	Serious	
(1)	(2)	(3)	(4)	(5)	(6)
i)	EVM:				
	a) Bean leaf (each piece)	1			
	b) Other EVM (each piece)	e			
ii)	Stem end	1			
iii)	Blemish:				
	a) Major blemish		3		
	b) Minor blemish		1		
iv)	Mechanical damage (whole and cut sizes)		1		
v)	Tough strings			3	
vi)	Fibrous unit			1	
Total allowable points (for whole style)		15	30	6	40
(for other styles)		15	50	10	60

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg

NEW DELHI 110002

Telephone

{ 331 01 31

{ 331 13 75

Eastern : 1/14 C. I. T. Scheme VIII M, V. I. P. Road, Maniktola

CALCUTTA 700054

{ 37 84 99, 37 85 61

{ 37 86 26, 37 86 62

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43,

{ 60 20 25,

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42

{ 235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)

BOMBAY 400093

{ 632 92 95, 632 78 58

{ 632 78 91, 632 78 92

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